Physical Training Leader Course

Overview

Name

Fit to Fight #3

- I want to make very clear that my focus is not on passing a fitness test once a year. More important, we are changing the culture of the Air Force. This is about our preparedness to deploy and fight. It's about warriors. It is about instilling an expectation that makes fitness a daily standard -- an essential part of your service.

Overview of Fitness Program

- All members must be physically fit
- Members must participate in a year-round physical conditioning program
- Commanders/supervisors must develop a fit and healthy environment
- Program backbone is Commander-driven fitness sessions
- Unit based program offered min 3/week during duty day
- Group fitness led by Physical Training Leaders (PT Leaders)

Course Objectives

- Define key roles and responsibilities
- Identify key partnerships
- Identify fitness components
- Define and apply F.I.T.T.E.R. Principle
- Define and apply Training Principles
- Ensure injury prevention techniques

Course Objectives

- **Identify special populations/considerations**
- **Identify environmental/safety concerns**
- **Define nutritional needs**
- **Learn motivational techniques**
- **Design class formats**
- **Learn assessment techniques and training**
- **Recognize available resources**

Key Responsibilities

Physical Training (PT) Leader

- Attends PTL course prior to overseeing and conducting unit fitness program
- Attends PTL fitness center orientation.
- Is Cardiopulmonary Resuscitation (CPR) trained with Automated External Defibrillator (AED) training recommended.
- Implements, leads & monitors approved unit fitness program
- Oversees and administers unit fitness assessments

Key Responsibilities

Physical Training (PT) Leader

- Maintains a good/excellent fitness level (score of 75+)
- Is available for at least 1 year
- Additional duty
- Is aware of risk factors/safety concerns
- Motivates troops as a role model of fitness

Key Responsibilities

Military Treatment Facility Provider

- Reviews cardiovascular risk screening on all members during PHA evaluations to determine risk level
- Assesses members at each visit and on request of their ability to fully participate in exercise and in fitness testing

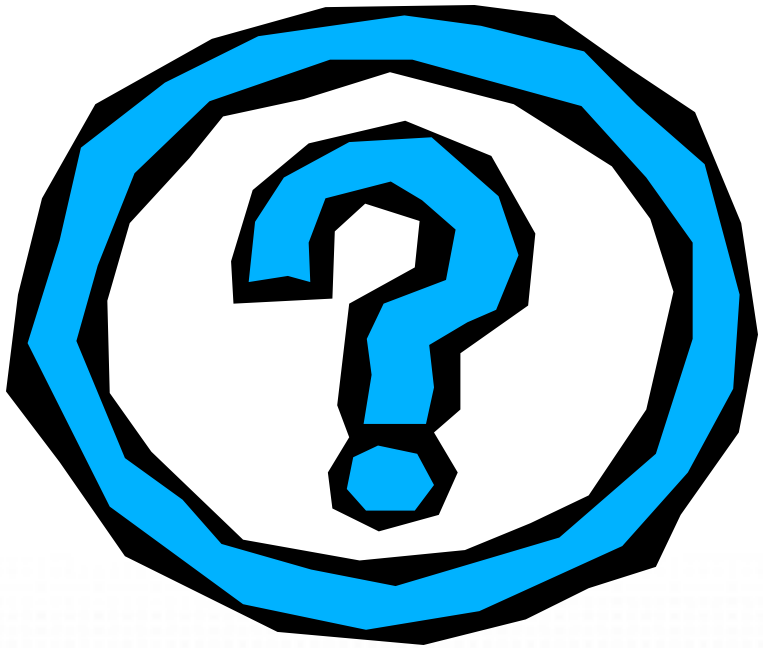
Partnering

- **HAWC**
  - Assists with developing squadron fitness program
  - Approves squadron fitness program
  - Provides educational classes
  - Offers individualized counseling
- **Fitness Center**
  - Provides Fitness Improvement Program classes
  - Conducts Fitness Center Orientation
  - Coordinates facility usage for training and testing
  - Generates the *“Services Support of CSAF’s new Fitness Program Guide”*

Partnering

- **Commanders**
  - Provides an overall work environment to support the fitness program
  - Implements and maintains all aspects of unit PT programs
- **Nutritional Medicine**
  - Consultant and educator on all nutrition concerns
- **Behavioral Health**
  - Offers guidance on behavior issues; stress, motivation, etc.

Questions



Physical Training Leader Course

Physical Fitness Components

F.I.T.T.E.R. PRINCIPLE

- ***F*requency**
  - Number of exercise sessions per week
- ***I*ntensity**
  - Level of difficulty
- ***T*ime**
  - Duration of exercise session
- ***T*ype**
  - Specific exercise modality
- ***E*njoyment**
  - Personal satisfaction
- ***R*ate of Progression**
  - Level at which exercise changes over time

Components of an Exercise Session

- Warm-up
- Cardio/Aerobic Phase
- Muscular/Anaerobic Phase
- Cool-Down/Stretching

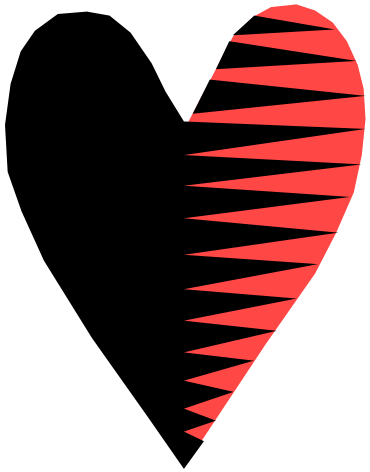
Components of an Exercise Session

Cardio/Aerobic Phase

- **Duration**
  - **20-60 minutes**
- **Type of Activity**
  - **Steady State Activities**
    - **Running, biking, swimming, etc.**
  - **Interval training**
    - **Activities that combine different intensity levels**
  - **Circuit training**
    - **Utilizes both aerobic and strength moves**

Components of an Exercise Session

- **Warm-up**
  - **Importance**
    - ∀↓ injury
  - **Duration**
    - 5-10 minutes
  - **Type of Activity**
    - Rhythmic movement using large muscle groups
      - Brisk walk, light jog, etc.
  - **Physiological Response**
    - Prepares body for upcoming workout



Components of an Exercise Session

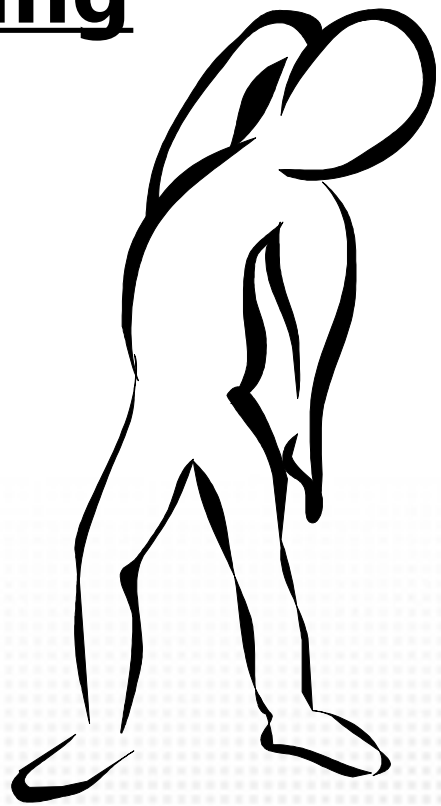
Muscular/Anaerobic Phase

- **Strength Training**
  - Callisthenic Moves
  - Machines
  - Free Weights
  - Elastic Bands

Components of an Exercise Session

Cool Down and Stretching

- Importance
- Duration
  - 5-10 minutes
- Type of Activity
  - Static vs. Dynamic Stretches
- Physiological Response
  - ↓ HR, BP to resting levels



Training Principles

Training Principles Apply to ALL Fitness Components

Overload

- **Improvements occur only when the system involved is challenged at a level beyond a certain threshold**
- **Improvements occur when the demands are consistently increased to levels above what it is accustomed to**

Training Principles

Specificity

- **Gains made in fitness are specific to the type of training and the muscle groups involved**
  - **Runners must Run!**

- **Cross-over of training**
  - **Some benefits will occur while performing the non-specific exercise**
    - **i.e. Bench press will assist in performing push-ups**

Training Principles

Progression

- **For improvement to occur in a safe and injury-free manner:**
  - **Must start at an intensity equal to the individuals current level of fitness**
  - **Gradual increases to allow the body to adjust in a slow, step-by-step fashion**
- **Phase I - 4-6 weeks**
  - **Initial stage**
- **Phase II - 4-5 months**
  - **Improvement stage**
- **Phase III - >6 months**
  - **Maintenance Stage**

Training Principles

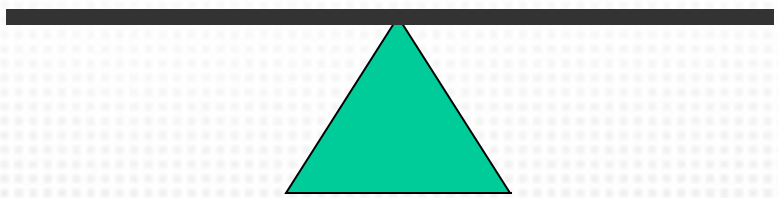
Regularity/Reversibility Principle

- Fitness improvements & maintenance can only occur when exercise is performed on a regular basis
- Detraining occurs rapidly
- Benefits of exercise are lost twice as quickly as the initial gains are made

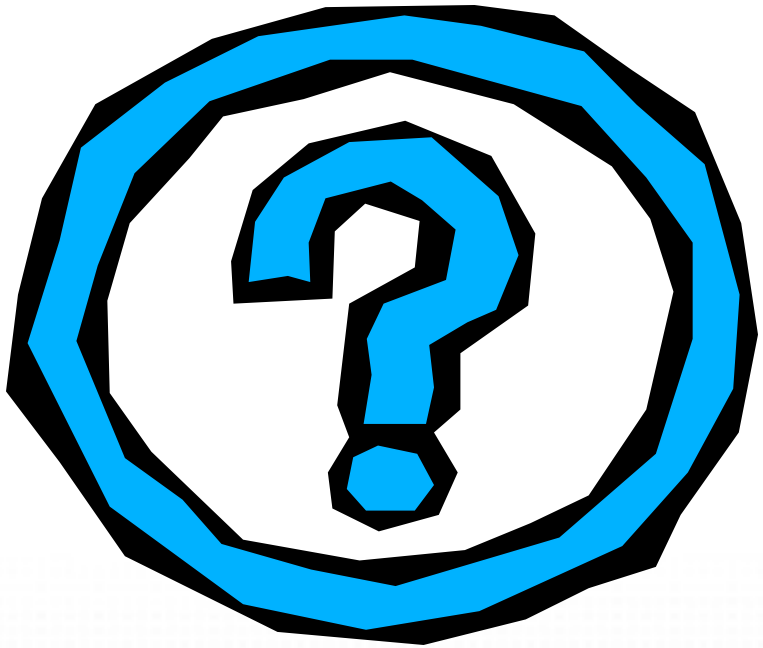
Training Principles

Balance Principle

- **Ensure opposing muscle groups are worked equally**
- **Muscle imbalances effect performance and can lead to injuries**
- **Relying too much on specificity of training ignores muscles and energy systems that must be exercised**
  - **Runners need upper body and core strength for optimal performance**
  - **Weight lifters can’t ignore aerobic workouts if they want optimal health benefits**



Questions

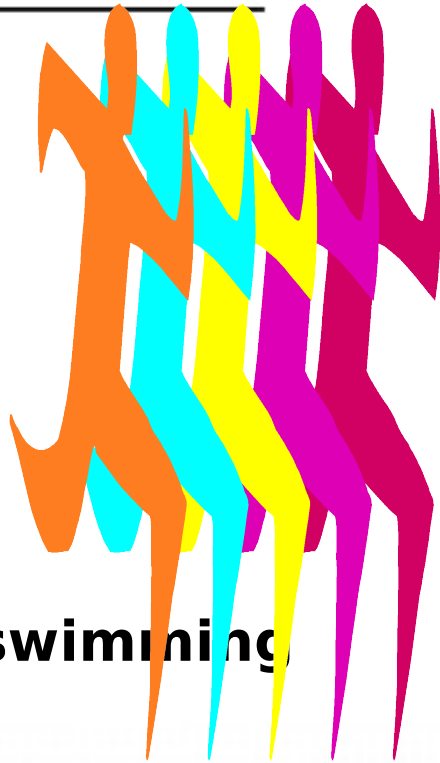


Physical Training Leader Course

Cardio/Aerobic Endurance

F.I.T.T.E.R. Principle

- **Frequency**
  - **3-5 days per week**
- **Intensity**
  - **60-90% of max Heart Rate**
- **Time**
  - **20-60 minutes**
- **Type**
  - **Walking, running, cycling, stepping, swimming**
- **Enjoyment**
  - **Select an activity that you enjoy & that fits into your schedule**
- **Rate of Progression**
  - **Walk → jog → run**



Cardio/Aerobic Endurance

- **Primary & Secondary Activities**

  - **Primary:** Running, biking, walking,
    stepping, indoor cycling, etc.

  - **Secondary:** Basketball,racquetball, softball, golf, etc.

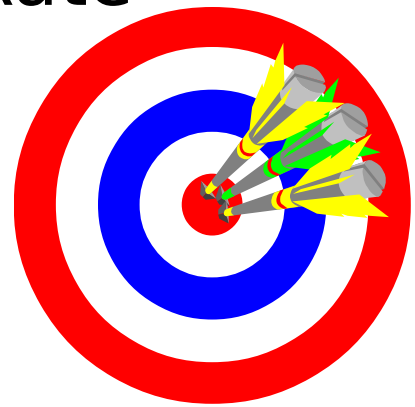
Cardio/Aerobic Endurance

Adaptations to Cardiovascular Exercise Training

- ↑ Max aerobic capacity
- ↓ Resting heart rate
- ↓ Blood pressure
- Improved efficiency of heart muscles

Cardiovascular Endurance

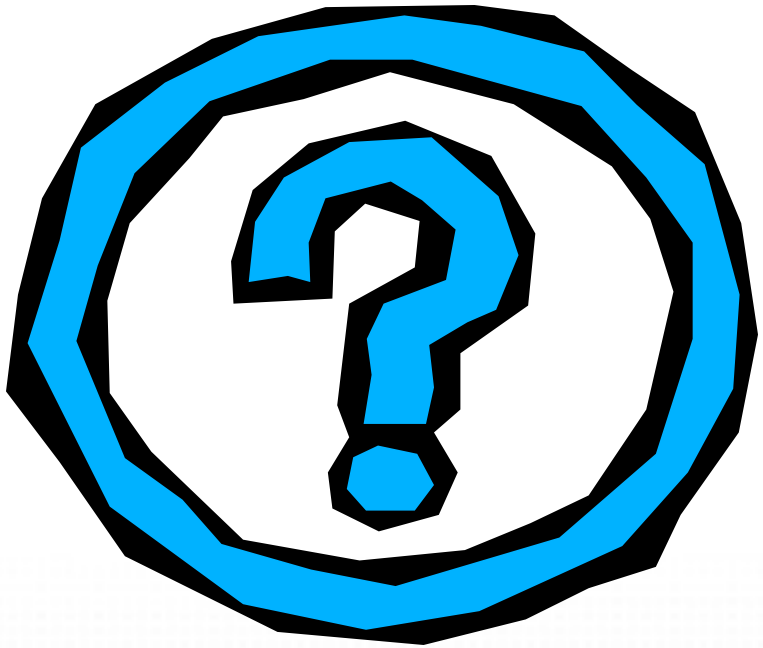
- Determining Intensity
  - Calculating Target Heart Rate
- Pulse Rate
  - Carotid Pulse
  - Wrist Pulse
- Rate of Perceived Exertion
- Talk Test



Rate of Perceived Exertion

- 6
- 7 Very, Very Light
- 8
- 9 Very Light
- 10
- 11 Fairly Light
- 12
- 13 Somewhat Hard
- 14
- 15 Hard
- 16
- 17 Very Hard
- 18
- 19 Very, Very Hard
- 20

Questions

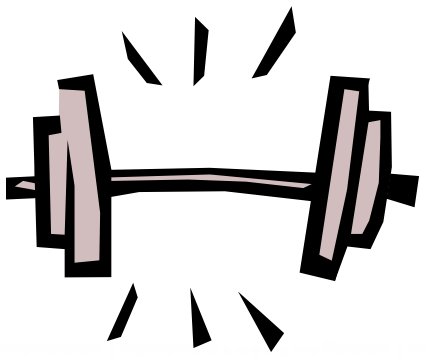


Physical Training Leader Course

Muscular Strength/Endurance

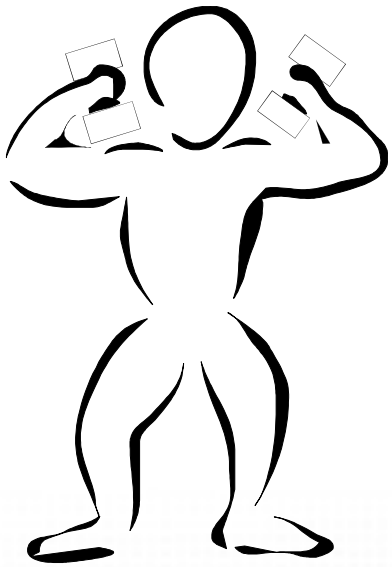
Muscular Strength/Endurance

- Muscular Strength
  - Maximum force a muscle produces against a resistance in a single, maximal effort
  - 1 Repetition Max (RM)
- Muscular Endurance
  - Capacity of a muscle to exert force repeatedly against a resistance or to hold a static contraction over time
  - Repeated Sets and Repetitions



Muscular Strength/Endurance

- Benefits of Strength Training
  - Improves body composition
  - Increases metabolic rate
  - Prevention of injury
  - Increased bone density
  - Proper posture
  - Perform daily activities without fatigue



Terminology

- Muscle Contractions
  - Concentric: Shortening of a muscle or the act of lifting a weight
  - Eccentric: Lengthening of a muscle or lowering a weight
  - Isometric: No change in muscle length but there is tension in the muscle

Isometric Contraction

Concentric Contraction

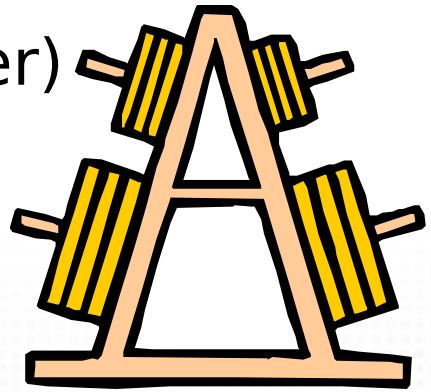
Eccentric Contraction

F.I.T.T.E.R Principle

- Frequency
  - Work each muscle group at least 2x/week on alternate days
- Intensity
  - Set/Reps; Minimum of 1 set of 12 reps
- Time
  - Relates to amount of time spent on each rep; 2-3 count
- Type
  - Select at least one exercise for each major muscle
- Enjoyment
- Rate of Progression
  - Slow and steady to reduce soreness, increase strength and maintain consistency

Strength Training Techniques

- Muscle Balance: Large before small
- Range of Motion
- Speed: Slow and controlled
- Breathing (avoid Valsalva Manuever)
- Repetitions: 8-12
- Rest periods: 1-2 minutes
- Sets: 1-3
- Increasing weight load



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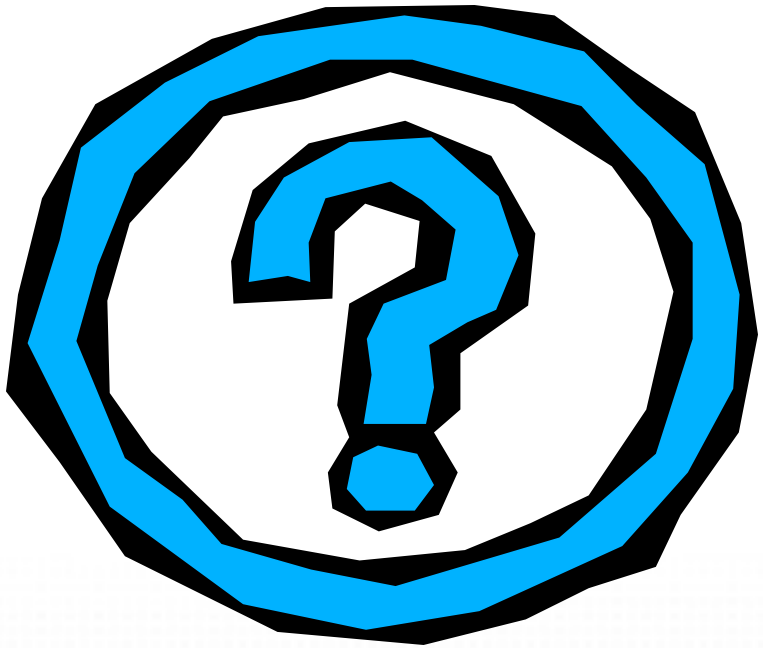


PTL Leader Course
Nutrition

Nutrition Basics

- Small frequent meals
  - Cornerstone for improving performance and helping with weight loss
- Eating every 3-4 hours (3 meals per day minimum) is ideal
- Eating as soon as possible after exercise is paramount for maximal recovery!
- Consuming a variety of foods (especially fruits and veggies, for their antioxidant content) will ensure maximal nutrient density of the diet

Unsafe/ Extreme Calorie Levels

- For Women < 1000-1200
- For Men < 1200-1500
  - With calorie levels lower than these the risk for malnutrition and nutrient deficiencies goes up.
  - The member will likely feel miserable (in general) and even worse during physical activity.
  - Basal Metabolic Rate will likely decrease
  - Weight loss tends to be more from muscle than from fat

Controlling Calories by Controlling Portion Sizes

- Members must control portion sizes to have any chance of success.
- Portion Control guidance:
  - Palm of hand
  - Deck of cards
  - Fist size
- Aim for 3-4 “portions” per meal and 1-2 per snack

Photos provided by Publications & Creative Services, Baylor College of Medicine, Houston, Texas.

Hydration

- Achieving adequate hydration
  is very important for performance
  and maximizing weight loss

- Drink 10 to 12 cups throughout
  the day at a minimum

- 30-60 minutes before exercising
  drink 1-2 cups of fluid, as tolerated

Fad Diets

- Promote quick & easy weight loss
- Limit types of food selections
- Rely on testimonials
- Promoted as cure-all
- Often need supplements/special foods
- No attempts to change long-term eating habits and lifestyles
- Often have contempt for the scientific & medical community
- Don’t waste your time!

What's the Deal With Low Carb?

- Initial weight loss nothing but fluid/glycogen
- Lost weight will typically return after resuming normal diet
- Difficult to maintain diet over long-term
- Will negatively effect performance, especially the run time, the largest component of the fitness test
- Diet is low in antioxidants (potentially detrimental to exercise recovery and immune system)
- Don't waste your time!!!!!!

Fat Loss Supplements

- Definitely Unsafe
  - Ephedrine Alkaloid containing products
  - Ephedrine, Aspirin, Caffeine (ECA) Stack
- Questionable or Unknown Long-term Safety
  - Ephedrine free products
  - Conjugated Linoleic Acid (CLA)
  - Calcium Pyruvate
  - Hydroxy Citric Acid
  - Chromium Picolinate
- Cost to benefit ratio of these products does not justify use. Encourage members to save their money.

***Please see additional information on these supplements in the PTL training guide and/or speak with your local Registered Dietitian for more info.**

What About Vitamin Supplements?

From the June 19, 2002 edition of the Journal of the American Medical Association (JAMA)…

"Pending strong evidence of effectiveness from randomized trials, it appears prudent for all adults to take vitamin supplements"

- **However, the researchers point out:**
  - Any supplement containing more than 100-200% of the RDA for the specified nutrient will likely not provide any additional benefit and potentially be detrimental.
  - It is preferable to obtain nutrients from foods versus relying solely on a supplement.

Silly or Unsafe Practices

- Daily weighing
  - Due to normal daily fluctuations it is pointless to weigh every day. Focus on behavior change and weight loss will come. Stick to weekly weighing at most.
- Diuretics, Laxatives, and Saunas
  - Increases risk for dehydration, electrolyte disturbances, and heat related illness
- Body wraps
  - Although otherwise safe, any reductions in abdominal circumference will be very short lived
- Extremely low calorie diets
  - As discussed…a bad idea

Links to Other Important Information

- Look for PTL Commander Call briefs on the Shape Your Future Your Weigh web site https://www.afms.mil/shapeyourfuture/
- Topics include:
  - Healthy vs. Unhealthy Fast Food
  - Healthy Vending Machine Food Choices
  - Role of Nutrition in Performance
  - Supplement Literacy
  - Sane and Insane Serving Sizes
- Please see additional recommended web site resources located in your workbook

If you are unsure of an answer to a member’s question or can not solve their problem based on the information presented here and in your handbook, please refer them to the appropriate professional (Registered Dietitian, Diet Technician, Exercise Physiologist, etc.).

Physical Training Leader Course

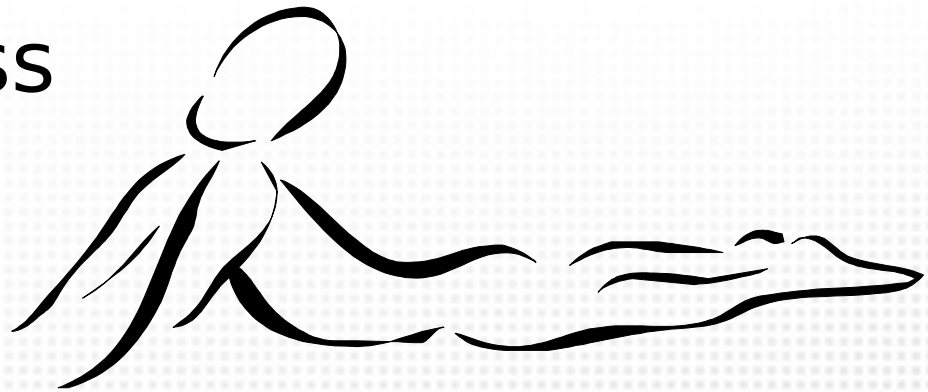
Flexibility

SSgt Justin Gonzalez
Master Fitness Trainer
NCOIC HAWC

Flexibility

Purpose & Benefits

- ∀↑ Range of Motion
- ∀↓ Injury
- ∀↑ Physical efficiency/performance
- Improved muscular balance and postural awareness



Terminology

- Range of Motion (ROM)
  - Amount of movement that occurs at the joint
- Static Stretch
  - Slow sustained stretch
  - Lengthens muscles through ROM
- Ballistic Stretch
  - Forceful bouncing stretch should **NEVER** be used
- Proprioceptive Neuromuscular Facilitation (PNF)
  - Partner assisted stretches

F.I.T.T.E.R. Principle

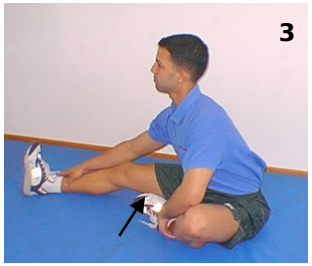
- Frequency
  - Stretch daily or as a minimum following workout
- Intensity
  - Hold stretch to point of mild tension, NOT pain
- Time
  - 10-30 seconds
- Type
  - Minimum of one stretch for each major muscle group, extra attention to tighter areas
- Enjoyment
- Rate of Progression
  - Begin with 1 set and increase to multiple sets to improve flexibility

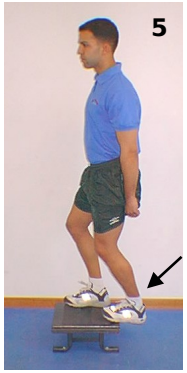
Stretch Before or After?

- Best time to stretch
  - Following a mild warm-up exercise
  - Following your exercise bout
  - After a warm shower, bath, or sauna
  - Daily whenever you can get the chance
- Do Not Stretch
  - Recent fracture
  - Recent strain or sprain
  - When sharp pain occurs with movement
  - Inflamed or infected joint

Primary Stretches

or





NOTE: For optimal results hold each stretch for 20 - 30 seconds repeat 2 - 3 times.

Stretches to AVOID!

Hurdler Stretch

Standing Toe Touch Stretch

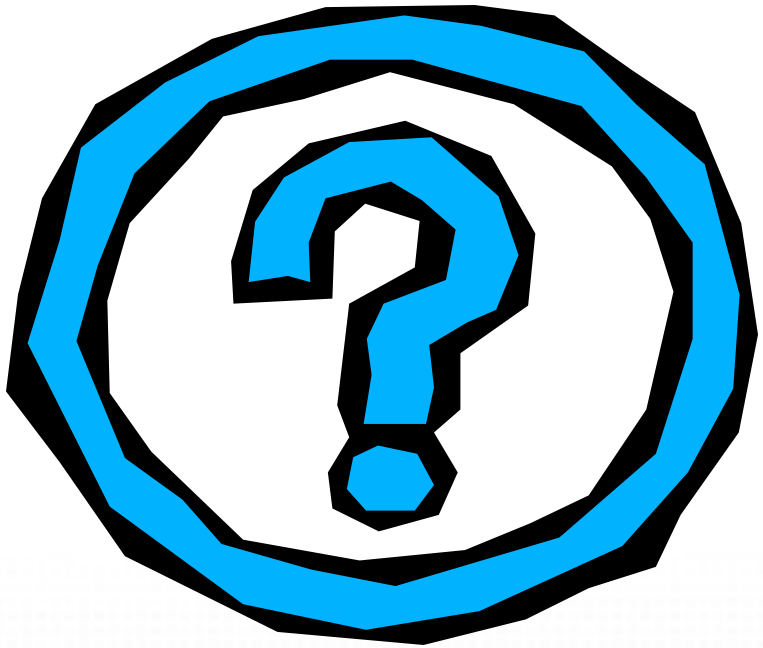
*Okay if you slightly bend knees

Cobra Stretch

Yoga Plow Stretch

Avoid EXTREME hypertension, some stretching of back extensors important

Questions



Physical Training Leader Course

Safety

Health Risk Factors

- Cardiovascular Risks
  - Smoking
  - Obesity
  - Sedentary Lifestyle
  - High BP
  - High Cholesterol
    - LDL
    - HDL
  - Diabetes
  - Family History premature CHD
  - Age and Gender

Pre-Participation Screening

- Identifies members at risk
- Screens for exemption in run assessment
- Determined prior to members being tested
- Clinical function conducted by providers using existing medical information

Unit Fitness Screening Questionnaire

- Distributed by UFPM 7-30 days prior to:
  - Assessment
  - Unit PT program involving maximal effort i.e. “practice fitness tests”
- Positive answers referred to PCM for evaluation
- Members exempted from run will test using cycle ergometry

Special Populations

- Your role as a PTL does NOT include diagnosing or prescribing medical conditions but……..
- You must be aware of special populations
- Safety is primary concern
- If in doubt, refer member to provider or FPM

Special Population Concerns

- Arthritis
- Back Pain
- High Blood Pressure
- Asthma
- Pregnancy

Safety

- Know your groups ability levels
- If unsure, give modifications
- Show proper body mechanics
- Don’t compromise joint stability
- Be aware of everyone in the group, not just your elite performers!

Safety

- Environmental
  - In all instances ACCLIMATE to local area
    - Initially lower exercise intensity; gradual progression
    - 6 weeks at all locations following PCS
  - Heat: Wet Bulb Globe Temp <85 F
  - Sun: UV index <10 (very high risk)
  - Cold: Temperature >20 F
  - Wind: Wind Speed <20 mph
  - Lightning: No lightning within 25 miles or wait at least 30 minutes after last sighting
  - Hail, Rain, Snow, Ice, Water & Mud
  - Poor visibility

Safety

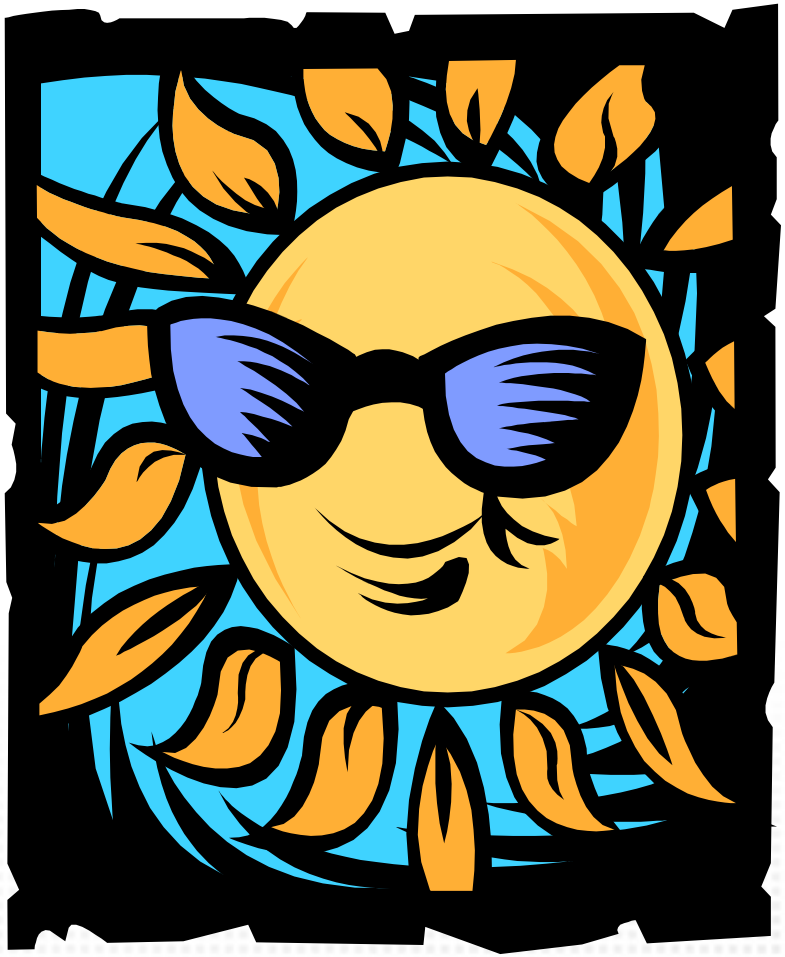
Environmental

- Cold Temperature Considerations
  - Hypothermia
- Recommendations
  - Longer Warm-up
  - Reduce body heat loss (hat, gloves)
  - Protect the extremities
  - Wear layers of loose fitting clothes: no cotton next to skin

Safety

Environmental

- Heat Stress
  - Heat Cramps
  - Heat Exhaustion
  - Heat Stroke – Medical Emergency
- Prevention
  - Drink adequate fluids
  - Proper clothing
  - Acclimation



Traffic Safety

- Use sidewalks and trails whenever possible
- When running in traffic, run against the traffic
- When cycling in traffic, cycle with the traffic
- Use reflectors when exercising, especially during early morning and evening hours when daylight is compromised

Safety - Spacing

- Insure appropriate spacing is used between individuals prior to beginning

Safety – Medical Emergencies

- Identify CPR trained individuals in unit
- Locate AEDs
- Outline emergency activation plan

Injury Treatment

RICE

- Rest – Complete rest for at least 48-72 hrs after acute injury
- Ice – 20-30 minutes at least 2-3 times/day for first 72 hrs
- Compression - Apply elastic wrap as much as possible first 72 hours to help minimize inflammation
- Elevation - Elevate affected part as much as possible during initial 72 hr period (higher than heart if possible)

Injury Prevention

- Slow progression
- Muscular strengthening/stretching
- Cross-training
- Rest
- Proper Equipment
- Surfaces

How to Determine Foot Shape

- Wet Foot Test
  - Get your foot wet
  - Stand on a surface that will leave a visible imprint
    - i.e. Brown paper bag or concrete

- Flat Feet

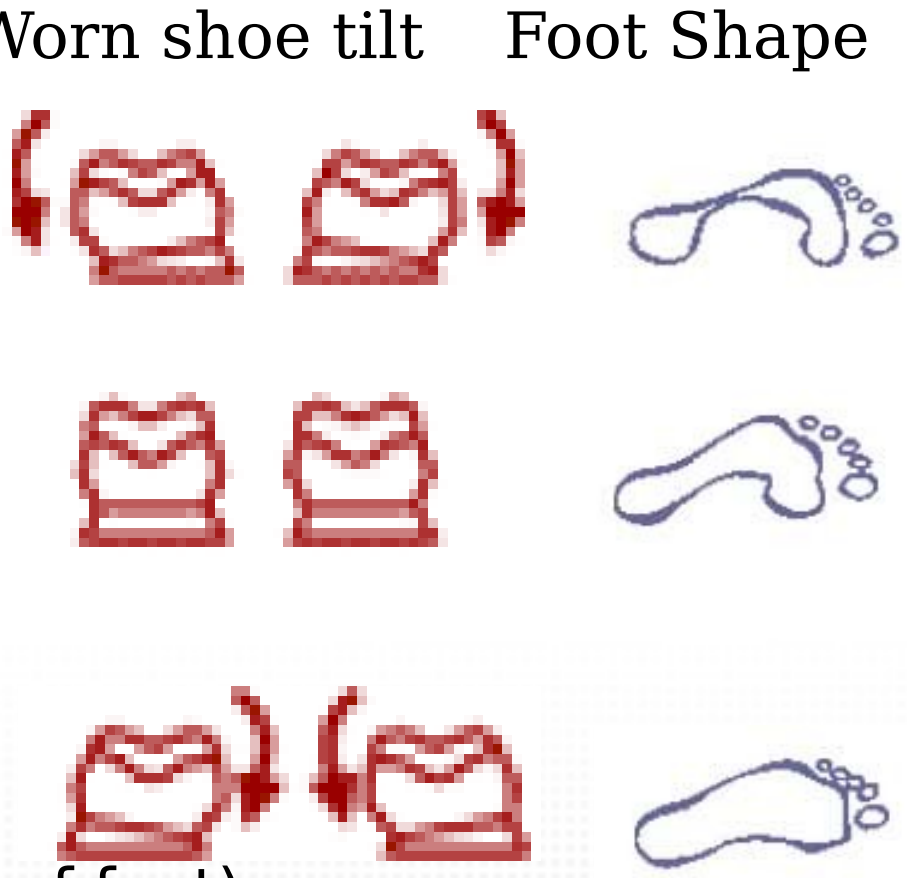
  - Looks like whole sole of foot is in contact with ground
- Normal arch

- High arch

Types of Running Shoes

- Cushioning
  - High Arch
  - Under pronation
  - Poor shock absorbers
- Stability
  - Normal Arch
  - Normal pronation
- Motion Control
  - Low arch
  - Overpronation

  (excessive inward rolling of foot)
  - Best shock absorbers



Footwear

- **SHOES-**
  - **Proper fit**
  - **Geared for the specific activity i.e. running, aerobic and court shoes**
  - **Running vs. Walking Shoes**
  - **Must Lace!!!!!**
  - **Proper width (blisters)**
  - **Offer good lateral stability, should not lean to either side when placed on a flat surface**
  - **Be replaced every 500 miles**
  - **Do not machine wash**

Safety - Running Surfaces

Advantages

- Concrete: level surface causes less trauma
- Asphalt: fairly flat, some shock absorption
- Cinder trails: more shock absorption
- Grass: softest of outdoor surfaces

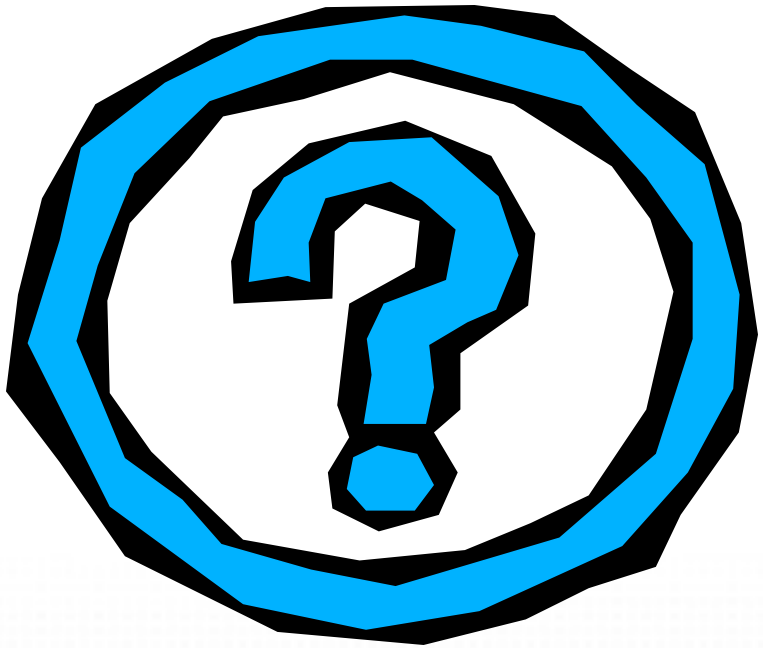
Disadvantages

- Concrete: hardest surface, unforgiving
- Asphalt: often crowned and causes awkward gait
- Trails: more variable surface causes higher incidence of traumatic injuries
- Grass: highest incidence of traumatic injuries

Safety -Clothing

- Fit comfortably and allow for free movement
- Geared for appropriate weather conditions
- No rubber or plastic suits
- Avoid nylon or tight clothes that interfere with the cooling mechanism of the body or obstruct normal blood flow

Questions



Physical Training Leader Course

Motivation and Group Leader Techniques

Individual Differences

- Challenges you may face…
  - Multiple physical concerns
  - Self-conscious participants
  - Apathy and no-shows
  - Over-exerters
  - Poorly informed but vocal
  - Too busy syndrome
  - Drill sergeants

Motivation

- Overcoming Barriers/Goal-Setting
  - Convenience/Time
  - Achieving goals
  - Support, approval, recognition, feedback, COMMITTMENT
- Motivational Techniques
  - Enthusiasm, performance feedback
- Incentive Programs
  - Make it FUN

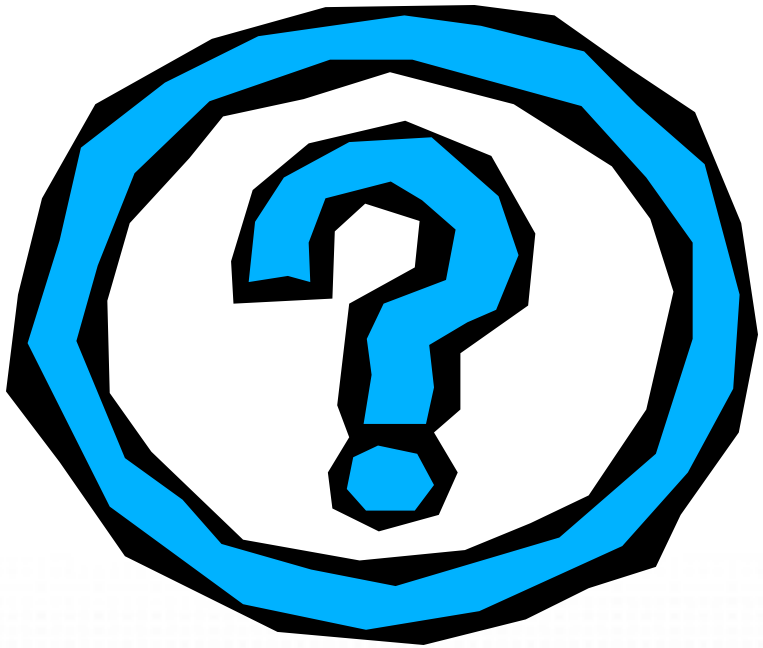
The Crucial Link: Communication

- Lead by example
- Define expectations clearly
  - How many sessions/week, how long, etc.
- Have a plan
  - What type of program will be offered; group run, circuit class, etc.
  - Don’t leave it until the last minute
  - Organize
  - Have a back-up plan
- Important Note:
  - Everyone is not created equal
  - Do not expect the same performance from everyone, but do expect the same effort

The Crucial Link: Communication

- Quality of work is always more important than quantity
- Deal with problems in a positive manner
  - You‘re the coach
  - Your team will only be as good as your leadership
- Be open to suggestions/comments

Questions



Physical Training Leader Course

Assessment Techniques and Training

Assessment Techniques and Training

- Assessment Evaluation
  - Cardiovascular Assessment
    - 1.5 mile run (must be medically cleared)
    - Cycle ergometry
      - For those exempt from running
      - In areas of extreme environmental conditions
  - Body Composition
    - Single abdominal circumference (AC) measurement
  - Muscular Fitness
    - 1 minute Pushups
    - 1 minute Crunches

Assessment Techniques and Training

- 100-point assessment score
  - Cardio = 50 possible points
  - Body Comp = 30 possible points
  - Pushups = 10 possible points
  - Crunches = 10 possible points
- Assessment categories
  - 0-69.9 pts = Poor category
  - 70-74.9 pts = Marginal category
  - 75-89.9 pts = Good category
  - >90 pts = Excellent

Testing Sequence

1 - Fitness Screening Questionnaire completed within 30 days of testing

2 – Height, weight measured but not used in fitness score calculation (BMI less than 19 referred to physician)

3 – Abdominal circumference measured
(height, weight and AC taken prior to other tests by CSS in private area)

4 – Push-ups (1 min test) – followed by at least 3 min rest

5 – Crunches (1 min test) – followed by at least 3 min rest

Testing Sequence

6 - Aerobic Assessment – 1.5-mile run followed by cool down

If possible all tests should be conducted on the same day *but AFI allows up to 5 duty days to complete all tests*

*Exception - if ergometry test is used it must be completed prior to push-ups and crunches due to HR effects

Individual Test Procedures

Height, Weight and BMI (by CSS)

- Height – measured without shoes – round up and record to nearest ½ inch
- Weight – measure without shoes – round up or down to nearest pound (subtract 2 lbs for clothes, any standard uniform or gym clothes may be worn)
- Calculate results for BMI – refer those less than 19 to medical provider

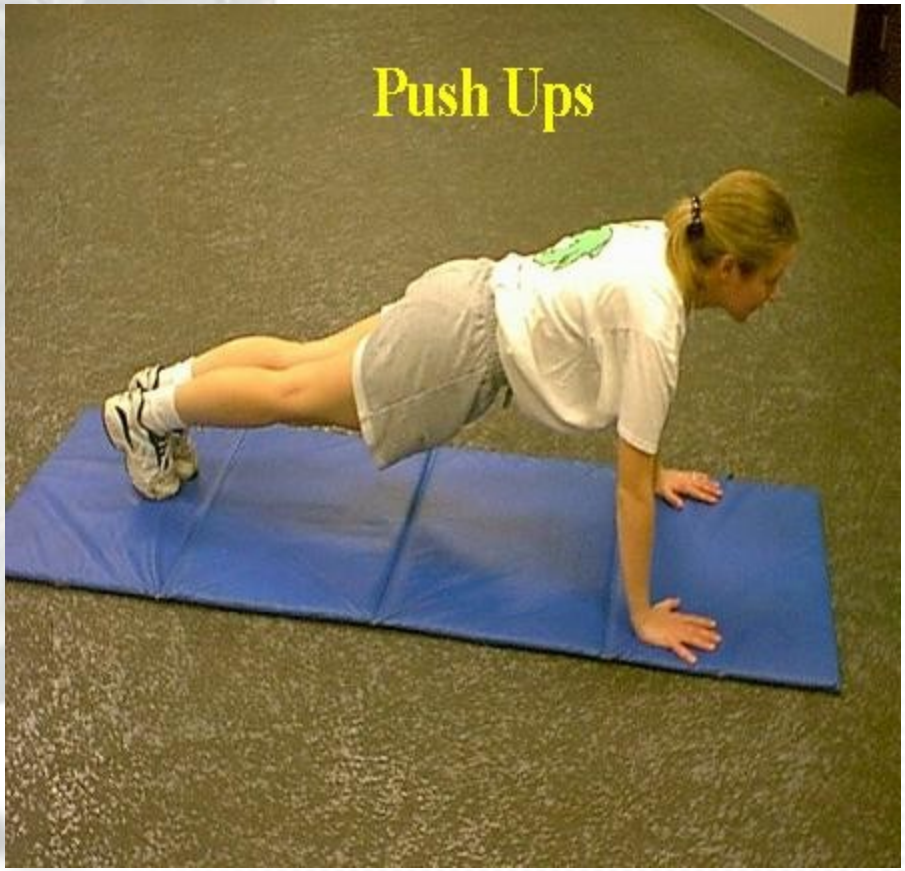
Individual Tests Procedures

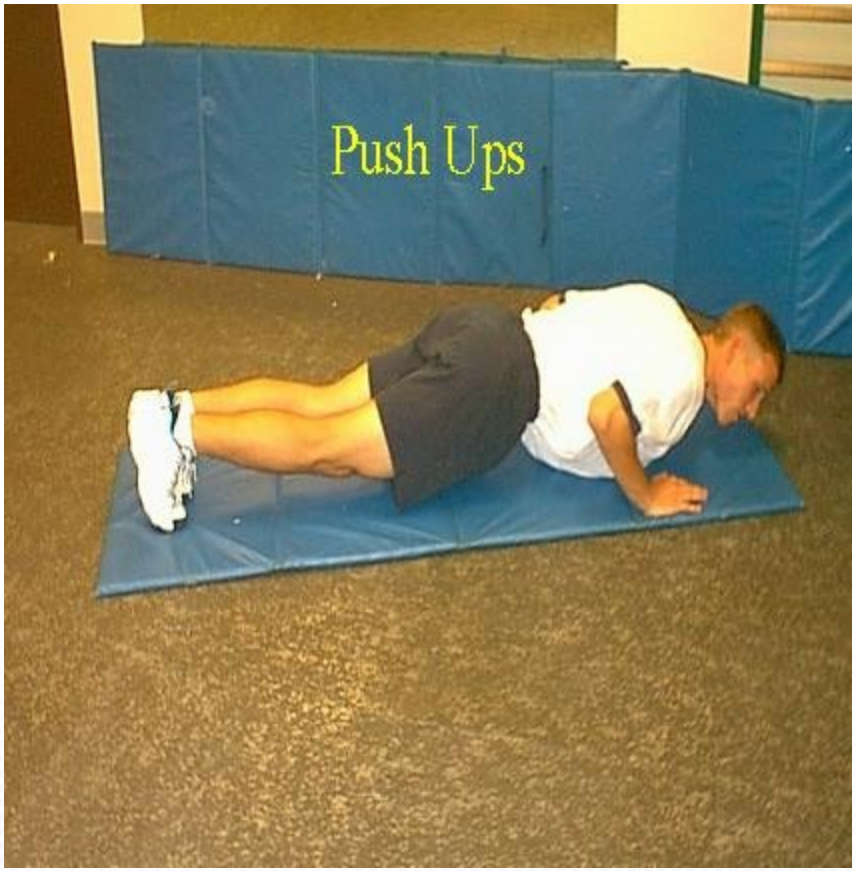
- **Abdominal Circumference**
  - Taken in private area by CSS
  - Seamstress tape to be used
  - Same gender taper faces members right side
  - Tape placed at level just **above** the right iliac crest on bare skin (tester will need to feel for this landmark)
  - Tape should be snug but not depress the skin
  - Make sure tape is kept horizontal to floor
  - Subject stands with hands to side after normal exhalation during taping

Individual Test Procedures

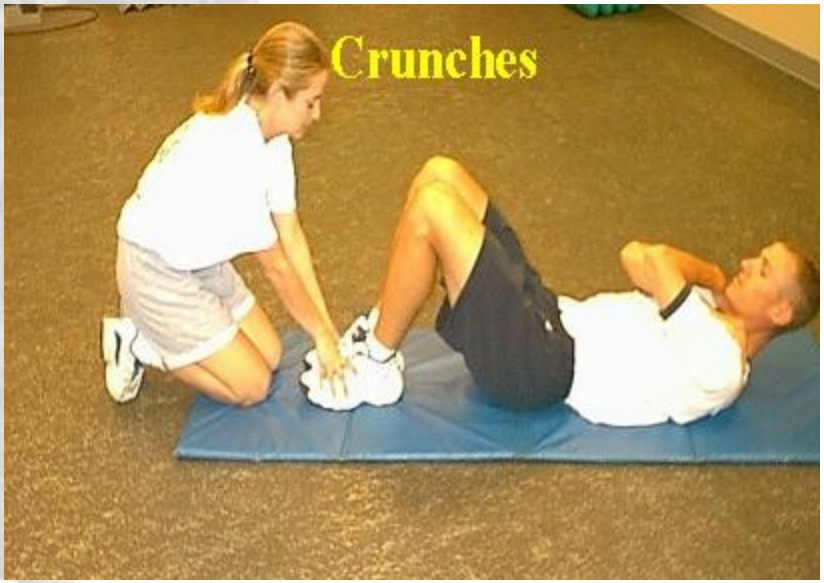
- **Muscular Fitness Tests** (exercise form is same as used in present program)
  - Follow verbal instructions outlined in AFI
  - Subject performs as many standard full body push-ups as possible for 1 minute
  - Record number and allow up to 3 minutes rest
  - Follow verbal instructions outlined in AFI
  - Subject performs as many crunches as possible for 1 minute
  - Record number and allow up to 3 minutes rest.

Push-up Assessment



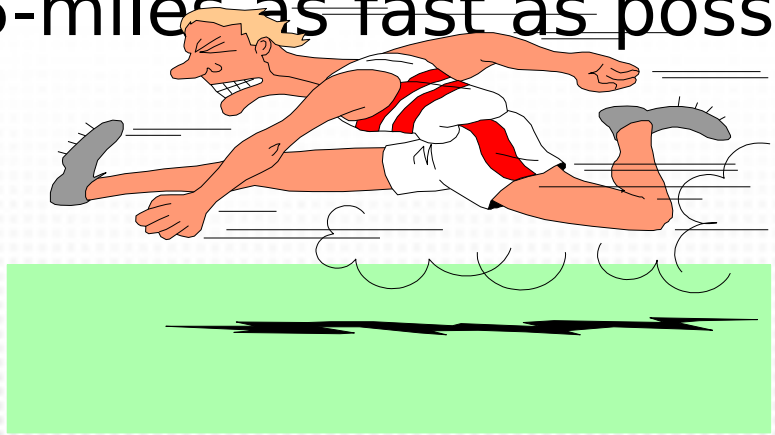


Crunch Assessment



Individual Test Procedures

- 1.5 mile run
  - Use base designated course
  - Follow outlined safety procedures
  - Follow verbal instructions outlined in AFI
  - Subject will be instructed to run 1.5-miles as fast as possible.



Questions